

REMARKS

I. Introduction

As an initial matter, in the interest of clarifying the official record, Applicant notes that the Examiner incorrectly refers to Applicant's Request for Continued Examination Under 37 C.F.R. § 1.114 filed on May 14, 2003 as a request for a Continued Prosecution Application (CPA) Under 37 C.F.R. § 1.53(d) (Office Action: page 2).

Applicant adds new claims 38-40. Therefore, by this Amendment, claims 1-40 are pending in the application. Claims 1-37 have been examined and are rejected.

Specifically, claims 1-37 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,312,115 to Hara et al. (hereinafter "Hara") in view of Japanese Publication No. 62-095225 to Hasegawa et al. (hereinafter "Hasegawa") and further in view of U.S. Patent No. 5,586,085 to Lichte (hereinafter "Lichte") and U.S. Patent No. 5,068,836 to Steel (hereinafter "Steel").

By way of overview, Applicant traverses the rejection of claims 1-37 as follows.

II. Claim Rejections – 35 U.S.C. § 103(a)

As noted above, claims 1-37 stand rejected under § 103(a) as allegedly being unpatentable over Hara in view of Hasegawa and further in view of Lichte and Steel.

A. Claims 1, 14 and 19

The Examiner acknowledges that Hara, Hasegawa and Lichte (alone or in combination) all fail to teach or suggest "a piezo-electric device for detecting a consumption condition of said

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AMENDMENTS TO THE DRAWINGS

The Examiner approves the Request for Approval of Proposed Drawing Corrections (for Fig. 12), as originally filed on April 3, 2002 (Office Action: page 2).

Consequently, Applicant submits herewith a replacement sheet for Fig. 12, wherein the reference label 105 is removed.

liquid in said liquid container, said piezo-electric device having a cavity connecting to an inside of said liquid container and said cavity contacting said liquid,” as recited in claim 1 (Office Action: page 3). The Examiner alleges, however, that Steel makes up for these deficiencies by disclosing “an integrated transducer comprising a housing (1) and [that] a cavity (4) is a part of the transducer for holding liquid for a piezoelectric element (6)” (*Id.*). Applicant respectfully disagrees.

Steel discloses a sonar transducer including, for example, an elliptical shell 1 and end plates 2, 3 defining a cavity 4 containing a piezoelectric stack 5 (Steel: col. 2, lines 9-12; and Fig. 1). Thus, in Steel, the cavity 4 is formed from the elliptical shell 1 and the end plates 2, 3 (*Id.*). In Steel, the cavity 4 is part of the overall transducer and not part of the piezoelectric stack 5 or the central wedge mechanism 6 of the piezoelectric stack (Steel: Fig. 2). Therefore, Steel fails to make up for the deficiencies of Hara, Hasegawa and Lichte because Steel also fails to teach or suggest a “piezo-electric device having a cavity connecting to an inside of said liquid container and said cavity contacting said liquid,” as recited in claim 1.

Furthermore, it is respectfully submitted that the Examiner fails to establish a *prima facie* case of obviousness by providing a reasonable suggestion or motivation as to why one of ordinary skill in the art, at the time of Applicant’s invention, would have been motivated to combine the references in the manner proposed by the Examiner.

To the contrary, the Examiner simply jumps to the conclusion that it would have been obvious to incorporate the disparate piezoelectric devices disclosed in Hasegawa, Lichte and Steel into the ink container disclosed in Hara, for the purpose of “providing an integrated

detector for detecting the consumed ink in the cartridge and allowing the detector [to be] easily inserted and removed from the cartridge” (Office Action: pages 3-4).

In particular, the Examiner merely makes the conclusory statement that a skilled artisan would recognize that the cavity 310 of Lichte can be modified by permanently attaching to the adaptor 750 of Lichte instead of the container 770 for reducing the size of the container without changing the function of the detector (Office Action: page 4). The Examiner concludes, therefore, that “attaching the cavity to the detector of Lichte for reducing [a] size of the container is considered to be a matter of a mechanical design expedient for an engineer” (*Id.*).

It should be noted that “the mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness” (*see* MPEP § 2144.04(VI)(C) citing *Ex parte* Chicago Rawhide Mfg. Co., 223 U.S.P.Q. 351, 353 (Bd. Pat. App. & Inter. 1984)). Instead, “the prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant’s specification, to make the necessary changes in the reference device” (*Id.*). Furthermore, as noted in *In re* Gal, a finding of “obvious design choice” is precluded where the claimed structure and the function it performs are different from the prior art (*see In re* Gal, 980 F.2d 717, 25 U.S.P.Q.2d (BNA) 1076 (Fed. Cir. 1992)).

Hara, Hasegawa, Lichte and Steel all fail to make any mention of reducing the size of a container. Furthermore, Lichte expressly discloses that the transducer interfaces with a container 300 having an extended well 310 (*see also* claims 1-8 of Lichte, which recite a “seat” in the lower end of the container). Thus, it is respectfully submitted that moving a cavity formed by

the extend well 310 of Lichte to the transducer 110 that interfaces with the extended well 310 would not have been an obvious design choice.

Furthermore, it is respectfully submitted that the Examiner fails to articulate a reasonable suggestion or motivation, without the application of impermissible hindsight, for combining the sonar transducer disclosed in Steel with any of the containers of Hara, Hasegawa and Lichte. Indeed, the sonar transducer of Steel differs in function from that of the piezoelectric device recited in claim 1. In particular, the transducer of Steel is directed to sound generating in a sonar system (*see, e.g.*, claims 1-7 of Steel), whereas the piezoelectric device of claim 1 is for “detecting a consumption condition of said liquid in said liquid container.”

In view of the above, claim 1 is patentable over the proposed combination of Hara, Hasegawa, Lichte and Steel. Claims 14 and 19 recite features similar to claim 1 and, thus, are patentable over the proposed combination of Hara, Hasegawa, Lichte and Steel at least based on a rationale analogous to that set forth above for claim 1.

B. Claims 2-13, 15-18 and 20-37

In view of the above, it is respectfully submitted that claims 2-13, 15-18 and 20-37 are patentable over the proposed combination of Hara, Hasegawa, Lichte and Steel at least by virtue of their dependency, as well as the additional features recited therein.

The Examiner fails to articulate how each of dependent claims 2-13, 15-18 and 20-37 are rendered unpatentable over the Examiner’s proposed combination of Hara, Hasegawa, Lichte and Steel. For example, the Examiner fails to establish that the feature of “said liquid container has at least one lyophobic part therein which is lyophobic to said liquid in said liquid container,”

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as recited in claim 13 (*see also* claim 16) is obvious over the proposed combination of Hara, Hasegawa, Lichte and Steel.

Similarly, the Examiner fails to establish that the feature of “the diameter of said cavity of said piezo-electric device is equal to or less than 1.0 mm,” as recited in claim 33, is obvious over the proposed combination of Hara, Hasegawa, Lichte and Steel.

III. New Claims 38-40

Applicant adds new claims 38-40 to obtain an expanded scope of protection.

IV. Formal Matter – Cited References

It is noted that Information Disclosure Statements were filed on May 12, 2003; July 14, 2003; July 25, 2003; September 3, 2003; December 30, 2003 and April 26, 2004.

The Examiner provides signed and initialed copies of Forms PTO-1449 and/or PTO/SB/08 submitted with the IDSes filed on May 12, 2003; July 14, 2003; July 25, 2003; September 3, 2003; and December 30, 2003, thereby indicating consideration of the references cited therein.

Applicant respectfully requests that the Examiner provide a signed and initialed copy of the Form PTO/SB/08 submitted with the IDS filed on April 26, 2004 in the next correspondence.

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V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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